

OTTO MÄTTAS

SISSEJUHATUS INFOTEHNOLOOGIASSE



OTTO MÄTTAS

AI



AI

Otto Mättas



<https://openai.com/blog/sora-first-impressions>



So who am I?

I have worked for 15 years as an IT engineer and architect in Estonia and abroad. For the last three years, my focus has been on artificial intelligence, including machine learning, expert systems, and human-computer interaction. In addition to developing technical solutions, my focus has been on processes and technology management, also AI ethics and legislation. I have created value in the private, public and third sectors.

On the left you can see a bunch of companies I've worked with. On the right, I have used a few images of some cool AI projects I've done. For example, our team achieved third place in the first ever AI Eurovision Song Contest.

Currently, I am making preparations for Estonia to be able to start the next Tiger Leap, specifically AI in mind.



Besides working towards making Estonia the world's AI flagship, I also keep myself grounded with activities such as making music and enjoying what the outdoors has to offer.

On the top left picture you can see me performing traditional Estonian music. Bottom left shows me on stage with a metal band. On the right you can see me sitting on top of a hill somewhere, strapped to my snowboard. I also enjoy walking, running and swimming.

**TAL
TECH**

Taltech
Doctoral Researcher

A black rectangular box containing the stylized text 'UYN' in a bold, sans-serif font. The 'U' and 'N' are tall, while the 'Y' is shorter and centered between them.

uku.ai
Founder and CEO



Artifig
Founder and Artellectic



Science Park Tehnopol
Mentor



Tartu Science Park
Mentor

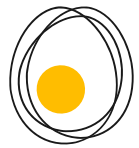


Tallinna
Ettevõtlus-
inkubaator

Tallinn Business Incubator
Mentor



Central Estonian Business Incubator
Mentor



Pärnumaa
Ettevõtlus-
inkubaator

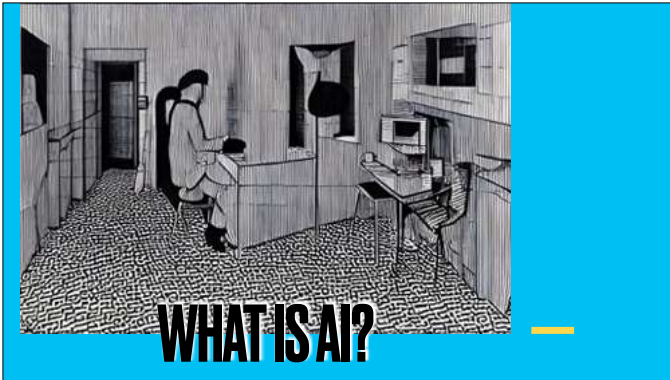
Pärnumaa Business Incubator
Mentor

**AI &
ROBOTICS
ESTONIA**

aire-edih.eu

AI & Robotics Estonia
Mentor

But that's enough of me for now, let's dive in...



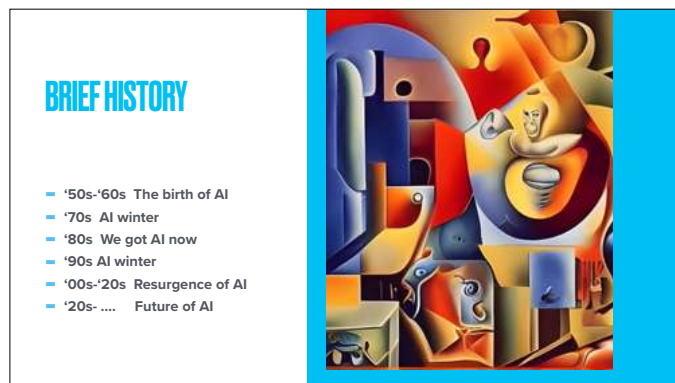
What is AI?

Who hasn't used AI?

Who has used AI? Where?

Definition of AI in simple terms

AI is a branch of computer science that aims to create systems capable of performing tasks that would normally require human intelligence. These tasks include learning, understanding language, recognizing patterns, problem-solving, and decision-making.



BRIEF HISTORY

- '50s-'60s The birth of AI
- '70s AI winter
- '80s We got AI now
- '90s AI winter
- '00s-'20s Resurgence of AI
- '20s- Future of AI

Brief history and evolution of AI

Discuss the origins of AI in the mid-20th century, its progress through the decades, and its current state. Highlight key milestones like the creation of the first AI program, the AI winter, and the recent resurgence of interest in AI due to advancements in machine learning.

The Birth of AI (1950s - 1960s): The concept of AI was first introduced by Alan Turing, a British mathematician who proposed the idea of machines that could mimic human intelligence. This led to the development of the first AI programs in the 1950s and 1960s, which were able to perform tasks like playing chess or solving algebra problems. This period was marked by optimism and high expectations for the future of AI.

AI Winter (1970s): Despite the initial excitement, progress in AI slowed down in the 1970s due to technical challenges and a lack of funding. This period, known as the "AI winter", was characterized by skepticism and

disappointment. However, it was also a time of important research and development, which laid the groundwork for future advancements.

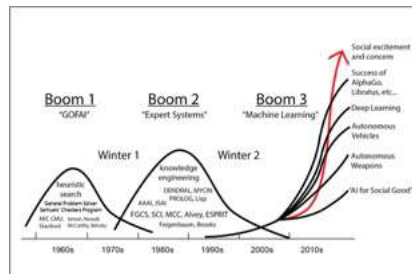
We got AI now (1980s): Let's try this again a little differently.

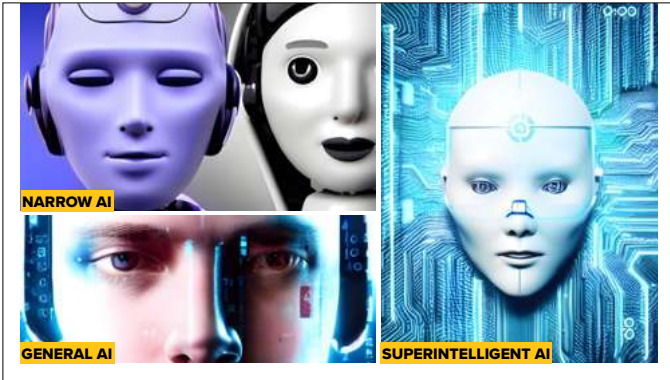
AI Winter (1990s): No, we actually don't. Another winter.

Resurgence of AI (2000s - Present): The advent of the internet and the explosion of digital data led to a resurgence of interest in AI in the 2000s.

Advances in machine learning, particularly deep learning, enabled AI to learn from large amounts of data and improve its performance over time. Today, AI is used in a wide range of applications, from voice assistants and recommendation systems to self-driving cars and healthcare diagnostics.

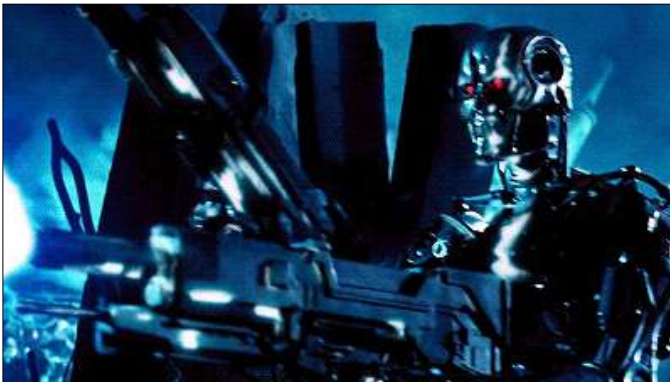
Future of AI: Looking ahead, the future of AI holds immense potential. With advancements in technologies like quantum computing and neuromorphic engineering, we could see AI systems that are capable of general intelligence, meaning they could perform any intellectual task that a human





Different types of AI explained in simple terms

- Narrow AI: AI systems designed to perform a specific task, like voice recognition. This is the type of AI we interact with in our daily lives, like Siri or Alexa.
- General AI: AI systems that possess the ability to perform any intellectual task that a human being can do. They can understand, learn, adapt, and implement knowledge in different domains. This type of AI doesn't exist yet.
- Superintelligent AI: AI systems that surpass human intelligence and capability. This is a theoretical concept and is the subject of much debate and speculation.



AI will destroy humanity?

... or a nifty ploy to get us consuming more?

WHAT IS AI?

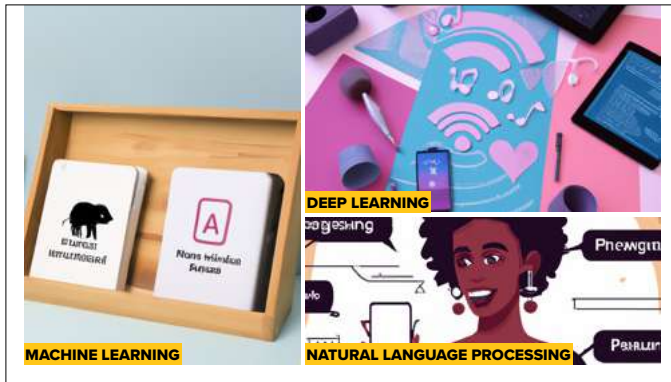


What is AI for you?
What is AI?

System[]
Sensor ->
Actuator <-
Algorithms *



<https://youtube.com/watch?v=DI0-ZA1DS-4>



Machine Learning: A type of AI that allows computers to learn from data without being explicitly programmed. It's like teaching a child to recognize animals by showing them pictures of different animals.

Deep Learning: A subset of machine learning that uses neural networks with many layers (hence 'deep') to learn complex patterns in large amounts of data. It's the technology behind voice control in consumer devices like phones, tablets, TVs, and hands-free speakers.

Natural Language Processing: The technology used to help computers understand and respond to human language. It's what powers the speech recognition in your smartphone or the chatbot on a website.



Computer Vision: The field of teaching computers to 'see' and understand visual information from the world, similar to how we use our eyes and brains to understand a scene or an object.

Robotics: The intersection of AI and physical machinery, enabling machines to interact with the physical world around them.

Expert Systems: These are computer systems that emulate the decision-making ability of a human expert. They are designed to solve complex problems by reasoning through bodies of knowledge.

EXAMPLE

TEXT GENERATION

A simple example of how Claude.ai or another LLM can be used to generate human-like text based on a prompt.

“Hello.”

What happens here?



AI TRANSFORMATION

How AI is transforming businesses

AI is revolutionising business operations, from automating routine tasks to making complex decisions faster and more accurately than humans. It's helping businesses improve efficiency, reduce costs, and deliver better customer experiences.

BENEFITS OF AI IN BUSINESS

- Efficiency
- Productivity
- Decision Making
- Customer Experience



Benefits of AI in business: Efficiency, productivity, decision making, customer experience, etc.

- Efficiency: AI can automate routine tasks, freeing up employees to focus on more strategic work
- Productivity: AI can work 24/7 without breaks, increasing productivity
- Decision Making: AI can analyse large amounts of data to provide insights and predictions, aiding in decision making
- Customer Experience: AI can personalise customer interactions, improving customer satisfaction and loyalty

BENEFITS OF AI IN EDUCATION

- Personalised Learning
- Enhanced Engagement
- Efficient Assessment
- Resource Optimisation
- Inclusive Education
- Real-world Skills and Preparedness
- Teacher Support



Personalised Learning

- Adaptive Curriculum: AI can analyze a student's learning style and adapt educational content accordingly, allowing for a more personalized learning experience.
- Targeted Feedback: AI systems can provide real-time, personalized feedback to help students understand their strengths and areas that need improvement.

Enhanced Engagement

- Gamification: AI can turn traditional classroom activities into interactive experiences, such as educational games or quizzes, which can help maintain student interest.
- Motivation: AI can set achievable but challenging goals for students, thereby keeping them motivated to learn.

Efficient Assessment

- Automated Grading: AI can speed up the grading process, freeing up educators to spend more time in the classroom.
- Skill Tracking: Machine learning algorithms can analyse test results over time to track the development of different skills, helping both educators and students understand progress and areas for improvement.

Resource Optimisation

- Smart Scheduling: AI can optimise timetables and resource allocation, making the educational process more efficient.
- Cost-Effectiveness: Automating routine tasks can result in financial savings, which can be reinvested in educational programs or technologies.

Inclusive Education

- Accessibility: AI-powered tools can help students with special needs by adapting resources to suit their abilities, for example, through voice-activated interfaces or real-time translation services.
- Cultural Adaptation: AI can tailor educational content to be culturally sensitive and inclusive, catering to a diverse student body.

Real-world Skills and Preparedness

- Career Pathway: Early exposure to AI in education prepares students for future job markets that will be increasingly reliant on technology.
- Problem-Solving: Working with AI-driven tools can enhance students' problem-solving and critical thinking skills.

Teacher Support

- Lesson Planning: AI can analyse data to suggest lesson plans that are likely

- to be more effective based on the history and performance of the class.
- Professional Development: AI can identify areas where the teacher themselves could improve or adapt their teaching methods for better student outcomes.

WHAT NOT TO DO

- Goals
- Data
- Implications
- Sustainability

Faill Accentution Alsillet Dal Faelnits



What not to do or failures to learn from

Discuss some common pitfalls of implementing AI, such as

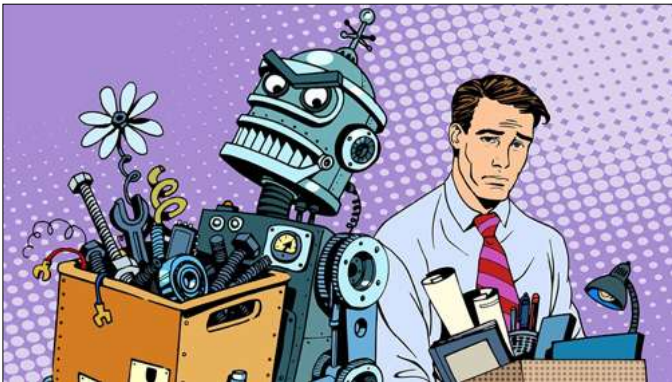
- not having a clear goal,
- not having the right data, or
- not considering the ethical implications.
- not having a sustainable plan.

EXAMPLE

LLMS FOR BUSINESS

How an LLM like Claude.ai can be used for tasks such as customer support, content generation, or data analysis. A small example of describing a product and creating a landing page.

“Write a compelling product description for a new smartwatch with the following features: GPS tracking, heart rate monitor, and water resistance up to 50 meters. Then create a modern website to showcase the product description. The website should be interactive with colorful buttons and an option to order the watch.”



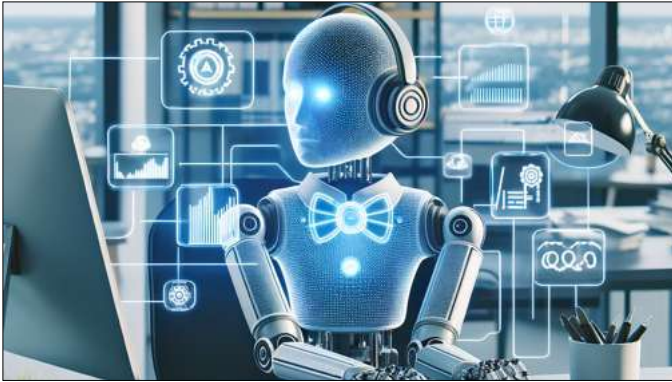
So what - the computer will take my job?

AI WILL TAKE MY JOB
TO THE NEXT LEVEL

AI will take my job...
To the next level.

DULL

Dull / Repetitive and Boring Tasks



Dull / Repetitive and Boring Tasks

Past: Data Entry and Processing

AI could have automated routine data entry tasks, reducing manual errors and increasing efficiency.

Near Future: Customer Service Chatbots

AI is increasingly managing basic customer service inquiries through chatbots, freeing human agents for more complex issues.

Future: Creative Writing Assistance

AI might assist in drafting creative content, providing suggestions, and automating parts of the creative process to overcome writer's block.



Dirty / Physically Unpleasant or Unsanitary Tasks



Dirty / Physically Unpleasant or Unsanitary Tasks

Past: Sewer Maintenance

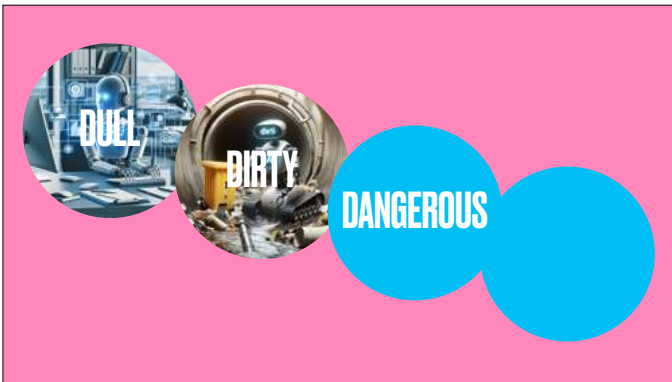
AI, coupled with robotics, could have been used for monitoring and maintaining sewer systems, minimizing human exposure to unsanitary conditions.

Near Future: Waste Sorting and Recycling

AI-driven robots are being developed to sort recyclables from waste, improving recycling efficiency and reducing the need for human involvement in waste handling.

Future: Hazardous Material Cleanup

AI could control robots to clean up hazardous spills or radioactive material, ensuring human safety.



Dangerous / Risky or Harmful Tasks



Dangerous / Risky or Harmful Tasks

Past: Coal Mining

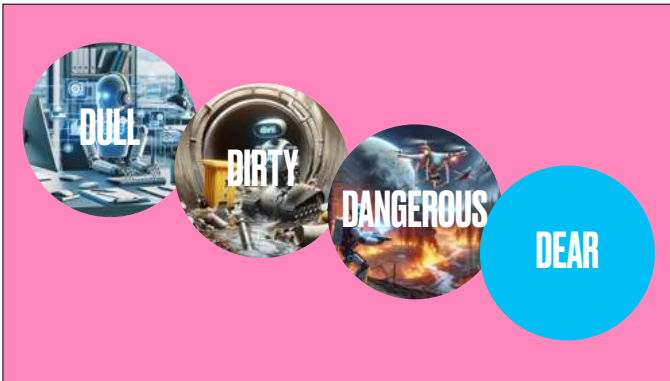
AI could have been used to monitor and predict mine safety issues, like gas leaks or structural weaknesses, reducing the risk to miners.

Near Future: Firefighting Drones

AI-powered drones are being developed to fight fires in high-risk areas, such as forests or high-rise buildings, minimizing the risk to human firefighters.

Future: Deep Space Exploration

AI could manage autonomous spacecraft for deep space exploration, handling complex tasks in environments too dangerous for humans.



Dear / Expensive Tasks



Dear

Past: Financial Market Analysis

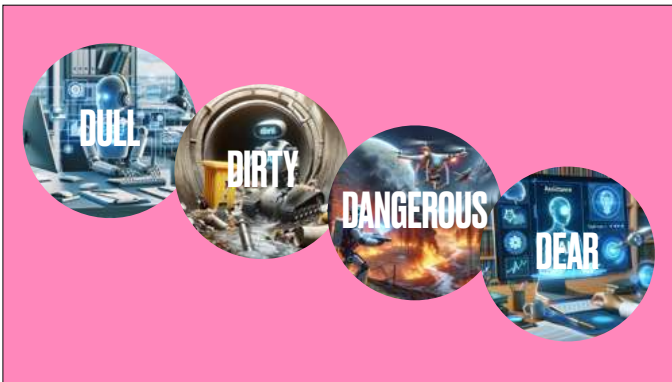
AI could have provided more accurate and rapid analysis of financial markets, aiding in investment decisions.

Near Future: Precision Medicine

AI is being used to analyze medical data to tailor treatments to individual patients, potentially reducing the cost of healthcare by improving outcomes.

Future: Legal Case Analysis

AI might be able to analyze legal documents and cases, providing insights and recommendations, thereby reducing the time and cost associated with legal research.



Dull / Repetitive and Boring Tasks -> Tüütud

Dirty / Physically Unpleasant or Unsanitary Tasks -> Tülgastavad

Dangerous / Risky or Harmful Tasks -> Tõsised

Dear / Expensive Tasks -> Tähtsad

Dull / Repetitive and Boring Tasks -> Tüütud / Korduvad ja igavad ülesanded

Dirty / Physically Unpleasant or Unsanitary Tasks -> Tülgastavad / Füüsiliselt ebameeldivad või ebahügieenilised ülesanded

Dangerous / Risky or Harmful Tasks -> Tõsised / Riskantsed või kahjulikud ülesanded

Dear / Expensive Tasks -> Tähtsad / Kulukad ülesanded

What's you dull, dirty, dangerous and dear tasks?

**"THE BEST WAY TO PREDICT THE
FUTURE IS TO INVENT IT."**

ALAN KAY / DENNIS GABOR

The best way to predict the future is to invent it.



Objectives of the Presentation

- Highlight the importance of AI and robotics in the current global landscape
- Demonstrate the potential for collaboration



Come find me at LinkedIN.

EESTI, ਪੰਜਾਬੀ, DANSK, 한국어, AZƏRBAYCANCA, PORTUGUÊS, ქართული,
मराठी, FRANÇAIS, മല, ՀԱՅԵՐԵՆ, TIẾNG VIỆT, NORSK, বাংলা, ITALIANO,
සමාග, MAGYAR, РУССКИЙ, ČEŠTINA, தமிழ், ҚАЗАҚ ТІЛІ, ESPAÑOL, SLOVENČINA,
DEUTSCH, 中文（繁體）, ལྷོ་, ΕΛΛΗΝΙΚΑ, БЪЛГАРСКИ, ગુજરાતી, СРПСКИ,
日本語, POLSKI, हिन्दी, SUOMI, NEDERLANDS, TÜRKÇE, മലയാളം,
УКРАЇНСЬКА, العربية, БЕЛАРУСКАЯ, HRVATSKI, SVENSKA, සිංහල, తెలుగు,
ไทย, བོད་སྐད་, 中文（简体）, ಕನ್ನಡ, فارسی, ROMÂNĂ, עברית

Let's talk about language for a bit.

Estonian language is usually well-represented due to the amount of online materials in Estonian.

PÕDUR ZAGREBI TŠELLOMÄNGIJA CIQO KÜLMETAS
XANADU GARAAŽIS JA OOTAS YOKO WATANABE ÖÖTÖÖD.

Tähestikupanoraam

Põdur Zagrebi tšellomängija Ciqo külmetas Xanadu garaažis ja ootas Yoko Watanabe öötööd.

LANGUAGE IS A SYSTEM OF
COMMUNICATION CONSISTING OF
SOUNDS, WORDS, AND GRAMMAR.

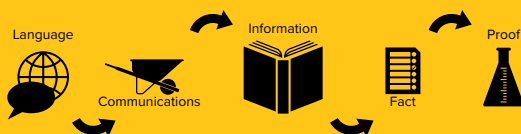
CAMBRIDGE DICTIONARY

Cambridge Dictionary defines “language” as a system of communication consisting of sounds, words, and grammar.



Sounds logical but I bet we can dig deeper and drill into this definition.

WHAT IS LANGUAGE?



Language - is a system of communication consisting of sounds, words, and grammar.

Communications - the various methods of sending information between people and places, especially phones, computers, radio, etc.

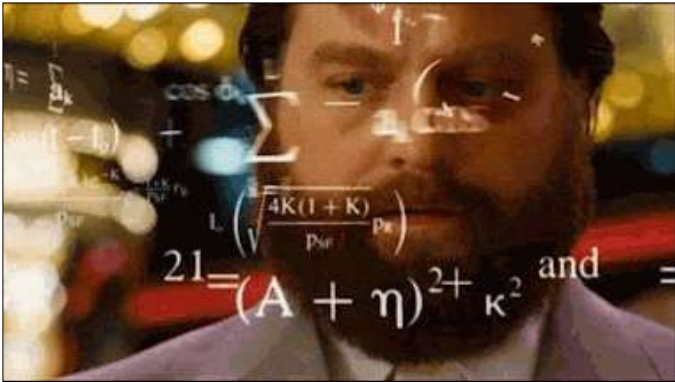
Information - facts about a situation, person, event, etc.

Fact - something that is known to have happened or to exist, especially something for which proof exists, or about which there is information.

Proof - a fact or piece of information that shows that something exists or is true.

The dictionaries compiled by the Institute of the Estonian Language fair a bit better but you end up with definitions that refer to each other again.

If you look at this picture, something seems to be missing. Don't you agree?



This can be quite confusing, don't you think?

The notion also ties into the title of my presentation - the quick brown fox jumps over the lazy dog. The sentence is an English-language pangram—a sentence that contains all the letters of the alphabet. The phrase is commonly used for touch-typing practice, testing typewriters and computer keyboards, displaying examples of fonts, and other applications involving text where the use of all letters in the alphabet is desired. Have you ever wondered what other silly purposes we use our languages for?

Anyway, I promised an addition for simplifying language explanation for people like me. Before I propose my addition, let me tell you a small story.



Does anyone recognise this picture?

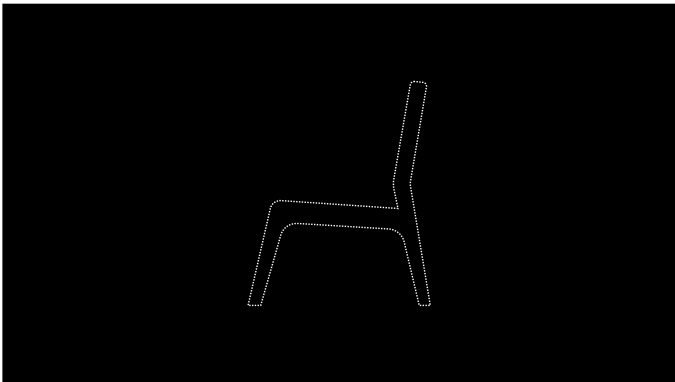
Turn off the lights.



The dark room ritual.

A thought is a worded picture in your mind. I would say that in other words, a thought is a learned construct to help us convey meaning to each other.

I promised a simplifying addition to the previous schematic, so for me, language is all about meaning. Luckily, “meaning” is a core term in semiotics and is often left undefined, this is so in Estonian and also in English. Anyway, we can not seem to go any further as far as language is concerned.



Let's investigate what “meaning” could be.

I am going to dip into philosophy here for a bit.

Lucretius, Plato, and later Descartes, were looking for the answers of the age old question "What is a Chair?" by also analysing the questions of mankind that come along with this deeper thinking.

A problem arises with abstract representational thought where we imbue more significance to the symbol... the word... than to what that word is a symbol of.

Plato's allegory of the cave.



Come find me at LinkedIN.
